

## ABSTRACT

A communications system is disclosed having an improved receiver designed to combat ICI in OFDM modulated signals. The receiver may also be designed to combat ISI in OFDM modulated signals. In one embodiment, the communications system comprises a transmitter that transmits an OFDM modulated signal, and a receiver that receives and demodulates a corrupted version of the OFDM modulated signal. The receiver includes an A/D converter, a transform module, and a detection module. The A/D converter converts the corrupted OFDM-modulated signal into a digital receive signal. The transform module transforms the digital receive signal into the frequency domain. The detection module determines a channel symbol from the frequency component amplitudes while compensating for correlation between the frequency components. In a preferred implementation, the detection module calculates for each frequency component, a weighted sum of the frequency component amplitudes from the transform module. The weighted sum minimizes expected error energy.

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